



# The life-cycle of national development banks: The experience of Brazil's BNDES



Ernani Torres<sup>a</sup>, Rodrigo Zeidan<sup>b,\*</sup>

<sup>a</sup> Instituto de Economia, Universidade Federal do Rio de Janeiro, Brazil

<sup>b</sup> NYU Shanghai and Fundação Dom Cabral, Brazil

## ARTICLE INFO

### Article history:

Received 22 July 2015

Received in revised form 15 July 2016

Accepted 19 July 2016

Available online 28 July 2016

### Keywords:

Development Banks

Financial Crisis

Institutional Void

Long-term Credit

### JEL classification:

H81

H54

O14

O16

## ABSTRACT

We posit a life-cycle hypothesis for the evolving role of National Development Banks (NDBs) using the case of one of the largest such institutions in the world, the Brazilian Development Bank (BNDES). NDBs are a particularly important institution for channeling long-term credit in less developed financial markets. However, we argue that as countries develop their financial markets, NDBs should share this role with other local banks and specialize their focus, eventually disappearing altogether. In the Brazilian case, we show how the BNDES evolved from a purveyor of long-term credit to a more complex financial institution. The BNDES was the most important tool used by the Brazilian government as a countercyclical response to the financial crisis. For many developing countries, institutions like the BNDES may be a tenable solution for building long-term local financial institutions and markets, and developing specialized human capital. However, they also pose potential risks centered on issues of scalability, crowding out, graft and inefficiency.

© 2016 The Authors. Published by Elsevier Inc. on behalf of Board of Trustees of the University of Illinois. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Since the First World War, industrialized and less developed countries have tried to bridge long-term financing needs through the creation of National Development Banks (NDBs). Over the years, the relevance of NDBs has waned in many nations, while in others governments still use them as a major or the main source of long-term credit. Over the years, the roles of many NDBs changed, from being a means to achieve industrialization to the pursuit of much more diverse objectives ranging from microfinance to student loans.

Understanding the trade-offs in terms of a dynamic framework allows policy makers to decide on how to handle the creation (and dissolution) of such institutions, the choice of financial products to be supplied, and the best way to manage them efficiently. NDBs represent a polarizing subject. La Porta, López-de-Silanes, and Shleifer (2002) argue that any form of government ownership of banks generates slower financial development. Other critics allege a lack of transparency, a tendency to privilege certain economic groups, and highlight the fact that NDB loans have a high level of subsidies

(Bond, 2013). However, NDBs clearly address a market failure in the long-term credit market of emerging markets, and their supporters emphasize the importance of NDBs for accelerated economic development (Gutierrez, Rudolph, Homa, & Blanco Beneit, 2011).

Here we posit a life-cycle hypothesis that combines historical analytical evidence with a review of the implications of the recent deepening of financial markets, establishing trade-offs that change as NDBs and local markets develop. Our main question is as follows: in the presence of institutional voids that generate inefficient and incomplete financial markets, are National Development Banks still relevant to bridge gaps in long-term credit markets in the development process? Specifically, we analyze the role of NDBs as bridges between the need to originate specific long-term credits, and the orientation of local private sector financial markets.

We contribute to the literature by presenting a life-cycle hypothesis in which NDBs are initially a particularly powerful institutional form for earmarking long-term credit in shallow and inefficient financial markets. However, in due course, as financial markets and countries develop, NDBs should become less relevant. We also present an analysis of the costs and benefits of creating NDBs. This builds on the literature and presents a contemporary take on the possibility of creating NDBs from scratch in emerging markets. An auxiliary hypothesis is that, given a comparatively solid institutional background, it is possible to use NDBs to jumpstart

\* Corresponding author at: 1555 Century Avenue, Room 1129, Shanghai, China.  
E-mail address: [rodrigo.zeidan@nyu.edu](mailto:rodrigo.zeidan@nyu.edu) (R. Zeidan).

latent long-term credit in local markets. We explore the necessary conditions for this to happen and point to major sources of risk.

We use as our case study the Brazilian National Bank for Economic and Social Development (BNDES), one of the largest development banks in the world. The BNDES focuses its attention on funding the investment projects and exports of large Brazilian companies. We show how the institution evolved from being a purveyor of long-term credit to playing a more complex role in the Brazilian economy, including the possibility of inefficient actions, such as when it builds minority stakes in Brazilian companies (Inoue, Lazzarini, & Musacchio, 2013). We conclude that for many developing countries, institutions such as the BNDES may not be the best solution for long-term finance. However, the BNDES does provide a tenable institutional experience that offers useful insights for building NDBs to fill an institutional void in emerging markets, even if there are risks in using such institutions to correct financial market failures.

The remainder of the article is organized as follows. In the next section, we briefly review the literature on NDBs in order to provide the basis for the life-cycle hypothesis. In the second section, we present the hypothesis and analyze the most important tools available for governments to earmark credit, with benefits and costs of using NDBs. The third section presents data highlighting the significance of the BNDES for the development of the Brazilian economy, while the fourth discusses the replicability of the Brazilian NDB 'model' for other less developed countries. In the last section, we offer some final comments.

## 2. On the role of development banks

Development banks are an important government tool for earmarking credit. Aghion (1999) has defined national development banks (NDBs) as government-sponsored financial institutions concerned primarily with the provision of long-term capital to industry. For the purposes of this article we add two caveats to this definition. The first is to concentrate on NDBs that use mostly domestic sources of funding, and the second to highlight the importance of NDBs in originating credit to non-financial corporations, by means of loans or capital market operations. These caveats are relevant because most of the literature focuses on development banks or government-owned banks in a broader sense than we intend here.

The golden age of national development banks began in the 1950s, when developing countries in many regions sought rapid industrialization. It lasted through the 1980s, when a wave of privatization saw more than 250 state-owned banks privatized (Megginson, 2004). The Washington Consensus curtailed the role of national development banks in the growth of local capital markets (Bruck, 1998). However, after the recent financial crisis many countries resorted to NDBs to smooth the effects of the liquidity and credit squeeze associated with the crisis. There is a clear strand of the literature that considers NDBs to be both inefficient and market-distorting (La Porta et al., 2002; World Bank, 2013). However, despite this NDBs are prevalent and present an important source of long-term capital in many countries (Gutierrez et al., 2011; Luna-Martinez & Vicente, 2012).

NDBs have diversified their operations over time, from dabbling in microfinance to insurance mechanisms, alongside new fields such as advisory, consultancy and training services; working capital and bridge financing; programs for institutional building (from human capital to entrepreneurial development); privatization design and implementation; credit allocation to climate change mitigation (Smallridge et al., 2013); and even straightforward portfolio building. However, the main role of NDBs is still to act in underfinanced areas. These would include the creation

of credit to finance long-term investments; mitigation of market failures arising from costly and asymmetric information; and the existence of externalities that result in underfunding of socially valuable projects (Gutierrez et al., 2011), alongside other development goals (Yeyati, Micco, & Panizza, 2007).

There is no consensus on the effectiveness of national development banks for economic growth. While, on the one hand, government-led credit allocation can help countries faced with financial repression and incomplete and inefficient capital markets, on the other hand it may hinder the development of efficient capital markets. What we do know is that most of the developed countries have at some point used, or still use, NDBs. There are no counterfactuals to the usage of NDBs in the development process, and they are still relevant players in many markets today.

We advocate a life-cycle hypothesis regarding the role of NDBs: these institutions may increase the pace of industrialization and growth, especially for the passage from 'developing' to 'middle-income' stages, with their main role being credit creation through direct mechanisms. As local markets develop, direct mechanisms lead to indirect mechanisms, such as guarantees and interest rate equalization; and when markets are truly formed, there should be no need for the presence of NDBs, unless in a minor role for specific sectors such as housing.

## 3. The life-cycle hypothesis of development banks

Financial repression and incompleteness of financial markets deters growth (Levine & Zervos, 1998). However, as Levine (1997, 2005) has noted, there is little consensus as to the form this relationship might take; for the great majority of authors, financial development determines (although does not cause) economic development.

There is some evidence on the relationship between government ownership of financial institutions and financial development, but it relies on public-ownership of banks in general and not NDB activities in particular. La Porta et al. (2002) find that higher government ownership of banks leads to slower financial development and lower growth of per capita income and productivity, while Micco, Panizza, and Yanez (2007) find that state-owned banks in developing countries tend to have lower profitability and higher costs than private banks, as do Berger, Clarke, Cull, Klapper, and Udell (2005). However, Hainz and Kleimeier (2012) show that for non-recourse project finance loans, the participation of development banks in the loan syndicate helps to mitigate political risk.

The work of La Porta et al. (2002) has sparked a marked controversy regarding the role of government in the banking system. Since then some studies have argued that the evidence in La Porta et al. (2002) is flawed (Yeyati et al., 2007). Körner and Schnabel (2011) find a negative impact of high NDB market share on growth only in countries with a low degree of financial development and low institutional quality. However, Andrianova, Demetriades, and Shortland (2008) find that higher state ownership in the banking sector is associated with faster growth, and that institutional factors are more important than the origin of capital.

Therefore, what do we know about the role of NDBs for development? Actually, not much has changed in the last 20 years. The two main strands of the literature for and against the usage of NDBs are still going strong, and the empirical evidence is mixed. We have precious little empirical evidence on the inner workings of NDBs but we do know that they still compose a large part of some national financial systems. Here we put forward a life-cycle hypothesis for the existence of NDBs, in which they emerge in countries with some solid institutions but incomplete and inefficient financial markets; grow up alongside industrialization and the

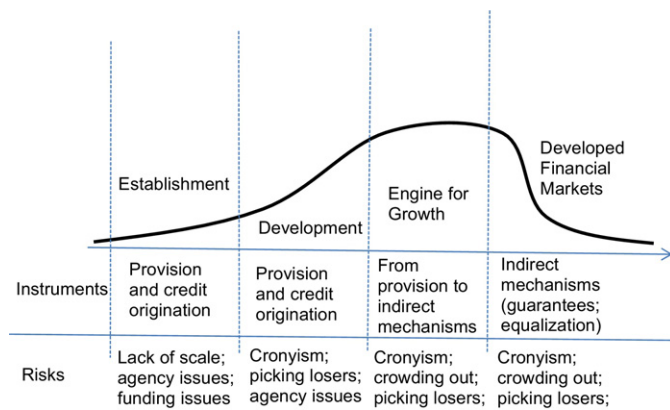


Fig. 1. Life-cycle of national development banks.

development of financial markets; and wither and die as countries fully develop, a pattern that is depicted in Fig. 1.

This life cycle is conditional on the costs and benefits of NDB actions in a market economy. Benefits are conditional on the interaction between growth, industrialization, and the development of financial markets, diminishing over time. Maximizing social welfare means relying more on credit creation in the early stages, and going to indirect mechanisms, less costly in fiscal terms, as countries develop. Throughout, there are governance issues associated with NDBs. We start by analyzing governance issues and then positing benefits and risks associated with NDBs roles in market economies.

### 3.1. Governance issues

The role of state owned banks is not limited to managing government funds. Their operations can also be funded by accessing regular financial markets or even individual savers. The reliance on market sources, however, imposes limitations on state owned banks in terms of fixing interest rates, maturities and other terms and conditions. In other words, this reliance places constraints on the discretionary power of NDBs to allocate resources.

In the past NDBs were, especially in emerging markets, black boxes. However, today we understand that to maximize their effectiveness while minimizing risks, there are important governance issues. First, governance should be based on professional management as the primary legislative choice (Horn, 1995), and focus on investment projects that are long-term, but at the same time present reasonable risk. Second, NDBs should follow Basel and other regulatory frameworks, and focus on regular risk management models. Third, NDB resource allocation should be transparent, both to decrease the likelihood of graft and political pressure. Our argument is in line with Musacchio and Lazzarini (2014) regarding the actions of state owned companies in financial markets. The authors argue that good governance can overcome some of the classic problems of state ownership.

### 3.2. Instruments of earmarking credits and of national development banks

We can divide the instruments for earmarking credit into two categories, according to the credit origination process. The first one, direct origination, is derived from the ability of a NDB to autonomously originate debt or equity. It can provide terms and conditions for new debt (interest rate, maturity and guarantees) different from those prevailing in the market. In the early stages of development, NDBs can be the main government tool to earmark credit for capital expenditures in different industries.

The second category, indirect origination, is the mechanism through which NDBs create incentives to stimulate other financial intermediaries to originate loans related to government targeted investment projects, companies or industrial sectors. These incentives can be further divided into provision of long-term funds; guarantees; equalization; and, less commonly, penalties.

#### 3.2.1. Provision of funds

Adequate supply of long-term funds in local currency is an essential feature of development, and particularly important in early stages of industrialization. In this case, commercial banks may refinance some of their loans with a government entity, which can be a special fund or a state owned bank. This mechanism strongly demands the use of fiscal or quasi-fiscal resources. In Brazil, this is the model of BNDES's operations with commercial banks. Provision of funds can be particularly effective if alternative private funding is scarce or expensive, and it gives governments more autonomy regarding interest rates and maturity. Additionally, tax rebates or subsidies can encourage financial institutions to grant loans with lower interest rates or better terms than they would normally offer to a specific set of clients, e.g. low-income family farmers, small and medium enterprises, exporters of high domestic content goods, etc.

#### 3.2.2. Guarantees

Through a guarantee or credit insurance, the government holds, under certain conditions, all or part of the risk of a loan. In exchange, the cost of funding for the final borrower are reduced to a level closer to the rates charged for public debt that, normally, are the lowest cost of funding in the local market. Guarantee schemes are very efficient from a fiscal point of view. They generate revenues (commissions and insurance premiums) up front and only require disbursement of public funds in the case of default. In the United States, government guarantees for private credit are widely used, accounting for 46% of the mortgage market in 2010 (Jaffee & Quigley, 2012). The main advantage of using guarantees mechanisms is the low demand for fiscal resources, but unlike provision of funds, this indirect mechanism do not create credit and, as such, does not work when credit markets are shallow, being more useful only in later stages of a NDB life-cycle.

#### 3.2.3. Equalization

Another important indirect mechanism is the subsidy or equalization of interest rates. In this case, the government pays directly to the lender part of the cost of a financial operation. This is a way to lower the interest rate offered to final borrowers. The present fiscal cost of this type of instrument is greater than that resulting from the use of guarantees, but the government no longer has the contingent burden to repay the debt in case of default. In the past, equalization was widely used by European export credit agencies. The impact on the public budget depends on the amounts equalized and the rates of equalization. In less developed countries, local financial markets may impose high discount rates for public guarantees and future flow of subsidies and, therefore, reduce their effectiveness. The market may charge very high rates for public credit or the risks involved in the payment mechanisms of these indirect mechanisms may be regarded as too risky for private institutions, which affects the ability of a Treasury guarantee or subsidy to reduce the cost of private loans.

#### 3.2.4. Penalties

The final means of indirect providing funds for socially targeted sectors is to create compulsory allocative rules for private funds. Instead of offering premiums, the government imposes penalties on banks that fail to meet specific goals. Such mechanisms are increasingly less common around the world. In Brazil, they are found in some of the Central Bank's regulations, which require commercial

banks to extend a minimum percentage of credit to agriculture, housing or microcredit, or face significant fines.

### 3.3. Risks and costs of national development banks

The main costs of NDBs are related to the opportunity costs of the government or compulsory funds used in subsidized long-term credit, either through direct or indirect mechanisms, plus direct costs associated with the operation of NDBs.

We can divide risks into general risks and those associated with each choice of direct or indirect mechanisms of credit creation and allocation. Moreover, NDBs may crowd out private markets and hinder the development of long-term capital markets.

General risks are: possibilities of picking losers (Robinson & Torvik, 2005); agency costs (Musacchio & Lazzarini, 2014); crony capitalism (Carvalho, 2014); lack of efficiency due to small scale; and crowding out effects.

Musacchio and Lazzarini (2014) show how agency problems can arise in state owned financial institutions, even though professional management can help reduce them. Agency costs increase the possibility of picking losers, which is something that is pervasive in the literature on industrial policy and the impact of government driven resource allocation. Moreover, as NDBs expand their roles, there is also the possibility of picking losers in such situations as minority shareholders, stock selection etc. Crony capitalism can distort “picking winners” strategies, and compound their risks, especially when the selection process of industries is affected less by development opportunities than by the political actions of future subsidized companies. Carvalho (2014) provides evidence that government control over banks leads to significant political influence over the real decisions of firms, with non-financial companies allocating capital to answer political pressure instead of economic efficiency. As with all public institutions, graft is a considerable risk for the efficient operation of NDBs, and that is why relatively solid institutions are a necessary condition for the creation of NDBs.

Moreover, NDBs need scale to be efficient. Given the purpose of funding long-term projects in industry and infrastructure, scale is important for NDBs to deliver credit to increasing demand for long-term funds in an industrialization scenario. For this reason, NDBs usually have their focus on large investment projects that are commonly associated with large companies.

Risks surrounding crowding out effects may appear in later stages of the life-cycle, particularly if NDB credits are much cheaper than the rest of the market. Because shallow financial markets cannot provide sufficient long-term credit at the beginning of the development process, NDBs can offer credit without displacing other financial institutions. As markets develop, local agents may be able to provide long-term credit, but NDBs size and subsidies may prevent the formation of long-term capital markets.

The risks associated with specific mechanisms either increase the cost to society or decrease the effectiveness of allocating resources to long-term financial markets. Guarantees are ineffective if market agents have no confidence in government payments in case of default, or if government actions are time inconsistent. Interest rate equalization is ineffective if basic rates are set at high levels or if the credit market is small and shallow. Also, if NDBs set interest rates much lower than the basic rate of the private market, it would increase the likelihood of crowding out effects. Penalties are particularly distortive in terms of efficient allocation, resulting in higher interest rate for all local markets.

The last source of risk is related to inertia, refocusing and dissolution. As NDBs lose their original effectiveness throughout the life-cycle, they should refocus their activities towards providing indirect mechanisms of credit and loans for newly targeted beneficiaries, such as small and medium companies or student loans, for instance, or be privatized. However, it is very hard for public

institutions to disappear. Timing matters, and costs accumulate, especially as a country develops financial markets.

### 3.4. Life-cycle and examples around the world

At the beginning of the development process, financial markets tend to be shallow and incomplete. In that sense, the role of NDBs should be to provide and originate long-term credit. As markets develop, and long-term finance from the private sector becomes more abundant, NDBs' role as a credit provider should turn from direct to indirect mechanisms, such as government guarantees and subsidies. When markets are fully developed, NDBs may become a source of distortion and should provide fewer benefits than the risks they cause. We can see the pattern of a life-cycle by looking at the experience of developed and emerging countries. NDBs

The first NDB in the United States was the War Finance Corporation (WFC). The federal government created it in 1918 to give financial support to industries related to the war efforts, and to provide funds for commercial banks that aided such industries. It was an off-budget agency funded initially with US\$ 300 million and that was authorized to issue US\$ 3 billion of bonds. After the war, the government extended its activities to assist in the transition to peacetime conditions. In the spring of 1919, WFC undertook the financing of the railroads, made loans to American exporters, and provided credit to agriculture, but it was short-lived and was liquidated in 1925. The federal government recreated it in 1932, because of the Great Depression, in the guise of the Reconstruction Finance Corporation (RFC) (Butkiewicz, 1995; Butkiewicz & Solcan, 2016). Initially, its focus was on refinancing of commercial banks. However, under the Roosevelt administration it started to target investments in infrastructure, mainly railroads and electricity, loans for agriculture, and exports financing. After the outbreak of the Second World War, its goal shifted to finance part of the war effort. It was the main source of funds to the aircraft industry and the machine-tool sector. According to Freeman (2006), during the 1933–45, the RFC lent out USD33 billion (over USD1.2 trillion in 2015). It was the largest lending institution in the United States in that period. The RFC was dissolved in 1956, but it was the model for the German Development Bank, the Kreditanstalt für Wiederaufbau – KfW (Todd, 1992).

Also because of the Great Depression, the Mexican government created the Mexican Nacional Financiera (NAFIN) in 1934. Similar to the RFC, the Mexican government restructured it during the Second World War to focus on long-term finance (loans and shares) for infrastructure and industrial projects. After the war, it also played an important role as a national partner of the US-Eximbank and multilateral agencies. From the mid-fifties until the early eighties, NAFIN provided between 30% and 50% of all domestic loans disbursed to the local industry. Its outstanding loans reached 12% of all Mexican bank loans in the late 1970s. Due to the Mexican external debt crisis of the 1980s, the government restructured it in 1986, and the bank lost its role as a provider of long-term finance for industrial and infrastructure projects (López, 2012). The Mexican congress passed a law to forbid NAFIN to originate new loans. Its main activity in recent years has been to rediscount loans for small and medium companies that commercial banks originate.

Between the end of the Second World War (1945) and the Korean War (1954), a new generation of development banks appeared around the world. The most important ones were those in Germany, Japan, Brazil and South Korea. The new NDBs in these countries had a common origin as an institutional response to the American government requirements of financial mechanisms for the disbursements of loans from the US Eximbank (Bordo, 1993).

In these four countries, the NDBs' original main goal was to supply long-term finance for investments in industry and infrastructure. As countries matured, they lost importance, with the



**Table 1**

Main financial indicators of BNDES, Inter-American Development Bank and World Bank (in US\$ million).

	BNDES 2014	IADB 2014	World Bank 2014
Total assets	330,253	106,299	343,225
Equity	11,572	23,697	38,637
Net income	3235	548	768
Disbursement	79,317	9423	44,582
Capitalization (%)	21.7	4.5	8.9
ROA (%)	1.0	0.5	0.2
ROE (%)	21.2	2.3	2.0

Source: BNDES, 2016.

exception of the BNDES in Brazil. For the other countries, NDBs lost market share and diversified. Japan's Development Bank, for example, became the main loan provider for the reconstruction of areas affected by earthquakes. The Korean Development Bank became a regular investment bank and KfW is now mostly responsible for student loans in Germany. The Japanese and South Korean banks were supposed to be privatized just before the financial crisis that started in late 2007, and they are close to completing their respective cycles. Mature economies with fully developed financial markets are set to dismantle or privatize their NDBs.

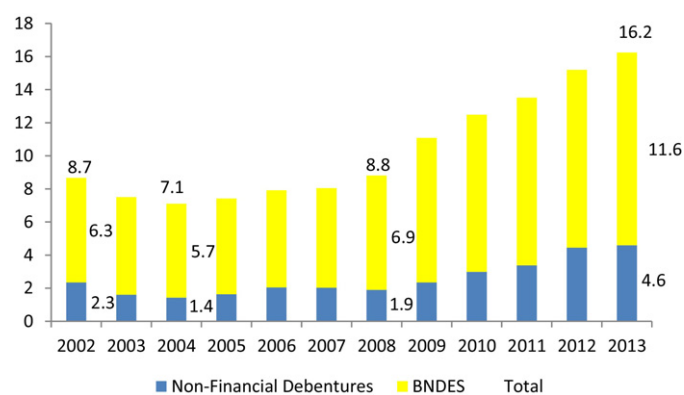
#### 4. The contemporary role of the BNDES in the Brazilian Economy

The Brazilian Development Bank (BNDES)<sup>i</sup> is the exception among the NDBs created in the 1950s inasmuch as it still plays a major role in earmarking credit for industrial and infrastructure projects. Nowadays, it is one of the largest development banks in the world. In 2014, for example, the value of BNDES disbursements was almost twice the amount provided by the World Bank. Other financial measures, like net income and return of equity, were also much higher for the BNDES, when we compare it to IADB and the World Bank, two major international development banks (see Table 1). One of the main reasons for the large size of the BNDES lies in the historical underdevelopment of local financial markets. Credit in Brazil, until the middle of the 2000s, had five salient features: scarcity, high volatility, high cost, high concentration, and segmentation (Torres & Macahyba, 2012). Short and long-term financial markets suffered from these features.

Some of these characteristics are less relevant today, as the size of the Brazilian credit system increased rapidly from 2004 to 2012. Scarcity and instability are no longer dominant characteristics, although there are still supply constraints in specific areas, such as the market for long-term funds.

Brazilian interest rates are still high, in relation to other large emerging markets. Real interest rates declined from 2002 to 2012, from an average of 12% in 2002 to 4% in 2012, but climbed to 6% in 2016. Additionally, Brazilian commercial banks charge spreads that are still among the highest in the world (Jorgensen & Apostolou, 2013), due to the lack of contestability by potential new entrants. Concentration among banks increased, even as credit rose. From 1995 to 2012, the share of assets of the 10 largest banks increased from 71% to 89%, mainly due to consolidation (Banco Central do Brasil, 2014).

Segmentation is still a marked feature of the Brazilian credit market. Quasi-fiscal funds still form the main supply for long-term credit. Even though private funds for long-term investments have risen, commercial banks are still restricted in the provision of

**Fig. 2.** Long-term credit for non-financial corporations (2002–2013).

Source: Banco Central do Brasil (2014) and CETIP (2014).

private long-term funds because of high interest rates. The result is that the BNDES still holds the largest share the long-term market for non-financial corporations, with commercial banks and the corporate bond market still relatively small, as we can see in Fig. 2. The segmentation of the BNDES into the long-term credit sector, and commercial banks in other loanable funds markets, remains a prevalent feature of financial markets in Brazil.

Funds managed by the BNDES are earmarked for the acquisition or export of machinery and equipment, construction of new plants, or infrastructure projects. In 2013, its share of these markets was over 70%. Half of its credits were direct operations with corporations, mainly large companies. The other half was credit refinanced by commercial banks, which lend mostly to small and medium companies. The maturity of these indirect operations rarely exceeds 7 years, while BNDES' direct loans may reach up to 25 years. In Brazil, SMEs face even more constraints than in more developed markets, since large companies can access BNDES funds more efficiently. Given high interest rates, the corporate bonds market reached only 4.6% of GDP in 2013.

After the financial crisis, the government used the BNDES as the main agent for countercyclical fiscal policy. Brazilian private commercial banks curbed the rate of expansion of their loans, shortening their length and increasing guarantees. The rate of growth of non-earmarked credit fell from 46.5% per year in October 2008 to just 1.0% at the end of 2009 (Banco Central do Brasil, 2014).

In the last quarter of 2008, the Treasury issued large volumes of debt in order to extend massive new loans to BNDES. As a result, the Brazilian Treasury, as early as 2010, became BNDES's main supplier of funds. From 2007 to 2010, loans from the federal government increased from 6% to 46% of the total sources of the bank. In 2015, they reached 56%. In the meantime, the share of special funds decreased to 31% (Fig. 3).

##### 4.1. BNDES as an earmarking credit institution: evidence and critiques

BNDES plays a leading role in the extension of credit for investment in infrastructure and industry, and export credit for higher value added manufactured goods and services. Therefore, large companies have always been the development bank's main direct clients.

Additionally, BNDES has an important role as a channel for other governmental indirect tools to earmark credit, and it refinanced in 2013 more than one million new loans related to fixed capital investments extended by other local banks. In order to avoid competition between the direct and indirect operations there are two important boundaries. First, commercial banks have preference on every loan up to R\$ 20 million (US\$ 7.5 million). Second, BNDES

<sup>i</sup> Brazilian National Bank for Economic and Social Development is known as BNDES because of its Portuguese acronym (Banco Nacional de Desenvolvimento Econômico e Social).

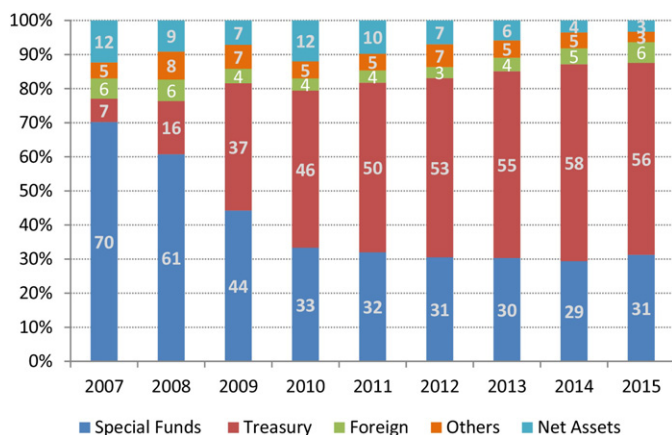


Fig. 3. BNDES's main sources of funds (in %).

Source: BNDES (2016). Percentages may not add up to 100% due to rounding.

does not have branches, does not take deposits from the public, and does not compete with commercial banks except in capital market operations. This arrangement is cost effective and allows small and medium companies to access the earmarked funds of BNDES through the commercial banks networks, even though they have shorter maturity and are more expensive than the terms offered in direct operations.

BNDES is also an important channel for other indirect tools for earmarking credit, since it offers equalized interest rates and credit guarantees for specific loans. They are open to all banks, but because of the risks involved on the payments mechanism adopted by the government, the market discount rates are set at high levels, making them cost ineffective. To compensate for that, BNDES holds the risks of the government guarantees and subsidies in its books and transfers the benefits to final borrowers. This is evidence that, unlike in most countries, indirect mechanisms to earmark credit in Brazil are still cost-ineffective, due mainly to high interest rates on public debt. Therefore, as guarantees and subsidies are still not able to fulfill their functions as market mechanisms, direct tools are still the main drivers of earmarking credit in Brazil.

However, this position as a more effective tool for earmarking credit does not guarantee that BNDES loans have a positive effect on companies' operational results and investment decisions. Carvalho (2014) highlights how BNDES may spur politically motivated inefficient investments in non-financial companies. However, there is a consensus that BNDES is part of a developmental strategy that has been renewed and updated for the challenges and opportunities of a more market-oriented economy (Hochstetler & Montero, 2013). Unfortunately, there are not many empirical studies on the impact of BNDES loans on the behavior of Brazilian companies in terms of investment and adjustment to the economic cycle, and two of the main ones, Carvalho (2014) and Oliveira (2014) present contrasting results.

Regarding Oliveira (2014), the author finds evidence that BNDES loans are particularly relevant for long-term investment. The author estimates the dynamics of firm investments in Brazil through the elasticity of capital expenditures of Brazilian companies in relation to unexpected monetary policy, financial restrictions, and BNDES financing. He concludes that unexpected monetary shocks and financial restrictions are keys to explain the investment patterns of Brazilian companies. He also finds strong empirical evidence that BNDES financing policy is important in explaining investment dynamics. Additionally, Oliveira (2014) illustrates that firms that would be more likely to obtain loans from BNDES are more resilient when facing an unanticipated decline in cash flow.

Musacchio and Lazzarini (2014) also analyze the impact of BNDES financing on public companies. Their results are much less pronounced than Oliveira's (2014). Even though they find that equity investments by BNDES allow firms to alleviate capital constraints and increase capital expenditures, they also find examples of the government using its minority position to intervene in the management of firms, especially in natural resource industries. They also find that BNDES's allocations do not seem to affect firm-level operational performance and investment decisions, although they do reduce the firm-level cost of capital due to governmental subsidies accompanying loans, a result that is corroborated by Lazzarini, Musacchio, Bandeira-de-Mello, and Marcon (2015).

Inoue et al. (2013) find that BNDES ownership does not create value for other shareholders of invested companies. The authors analyze the role of BNDES as a minority shareholder, and find a positive effect of those stakes on firms' return on assets and on the capital expenditures of financially constrained firms with investment opportunities. However, these positive effects are substantially reduced when minority stakes are allocated to business group affiliates and as local institutions develop. This is in line with our main hypothesis regarding the life-cycle trajectory of NDBs; necessary as countries emerge from developing status, but increasingly irrelevant as financial markets develop. In a lowly-developed institutional environment, BNDES minority stakes can improve governance and generate economic return, but as markets develop this effect disappears and, in the future, the role of BNDES should, if Brazil is slow to develop, be concentrated on long-term credit operations.

#### 4.2. The life cycle hypothesis and the future of BNDES

Is BNDES an example of the life-cycle hypothesis for NDBs? Our answer is yes. Until the early 2000s, maturities of bank loans and of bonds issued in the Brazilian capital markets were very short, mostly up to two years. Since then, the situation changed. Housing and corporate long-term debt markets grew faster than GDP, interest rates decreased and maturities increased. Foreign investors took large positions in the public debt (17%) and equity markets (more than 40%). As a result, Brazilian capital markets are the largest in Latin America in terms of size and liquidity, and Brazilian banks are large, well capitalized and increasingly international.

Despite that, the BNDES still plays a major role in the long-term credit market, due mostly to high interest rates. However, most of the main elements for the development of long-term capital markets are already in place: scale, liquidity, regulatory stability, private investors and demand from SMEs and large companies. Therefore, whenever interest rate is reduced to international levels, most of the indirect operations of BNDES will become largely funded by commercial banks and we can easily predict that given lower interest rates, direct origination will be less necessary and the size of BNDES' assets will be halved in a relatively short period.

#### 5. The life-cycle hypothesis: should NDBs be replicated in new emerging markets?

If we look at the evolution of the role of NDBs as seen in the previous sections, and exemplified by the case of the BNDES, we can see that even though NDBs are still a relevant feature in some emerging markets, their role is typically small in more developed countries. There is an important debate over the importance of NDBs for established emerging markets like Brazil, China or South Africa. The main counter-argument against the extensive use of NDBs in countries with well-established financial markets is the possibility of the inefficiencies highlighted in section 2.3. For developing countries, earmarking credit by means of NDBs can be relevant

in funding the long-term projects that otherwise would not be funded due to incomplete financial markets. Most poor countries cannot get access to funding for long-term projects unless it comes from shallow local financial markets or international organizations. Industrialization is based, on among other things, long-term credit that is readily available. Yet, are NDBs a first best policy to achieve rapid growth and industrialization?

The most powerful combination of earmarking tools is credit origination and the provision of fiscal or quasi-fiscal funds. As such, this combination, coupled with efficient bureaucracies capable of limiting market distortions (and preventing graft), would be the preferable way to fill the institutional void that decreases the likelihood of funding for large infrastructure projects in poor countries.

As financial markets develop, the case for a NDB that originates credit and provides funds weakens, and countries can decommission these institutions or use the expertise they have accumulated to manage indirect tools, which is the path that the US and many countries in Europe have taken.

It is important to notice that alongside the obstacles to properly earmarking credit for long-term infrastructure projects, there are some institutional aspects that need to be considered if a country is to create a successful NDB. From the BNDES experience and the empirical evidence, the main obstacles to filling the institutional void of long-term credit to infrastructure projects are the possibilities of: picking losers (Robinson & Torvik, 2005), opportunity costs in terms of subsidized loans, crony capitalism, lack of efficiency due to small scale, and crowding out effects. The last is a characteristic of credit origination, while scale is a characteristic of market size, but the others depend on some institutional effectiveness. And therein lies one important issue. For a successful filling of the long-term credit void, there should be sufficiently strong institutions to curtail the main risks with opening a development bank, but, of course, not strong enough to generate a functional long-term credit market. Therefore, countries with serious governance issues are not good candidates for the creation of a NDB, while countries with increasingly better governance would be suitable candidates, with NDBs likely to improve their development path.

## 6. Final comments

There would be no use for National Development Banks if financial markets were efficient and complete, but that is far from the reality of emerging markets or poor countries. In the past, many countries used NDBs in the development process, with a golden age period stretching from the 1950s to the early 1980s, in which NDBs were a tenable solution to the lack of funding sources for long-term projects, and for the creation of local industries and infrastructure (Gutierrez et al., 2011).

We define National Development Banks (NDBs) as government-sponsored financial institutions concerned primarily with the provision of long-term capital to industry and infrastructure, financed mainly by domestic sources of funding, and offering direct provision of credit to companies, by means of loans or capital market operations. We argue for a life-cycle hypothesis for NDBs in which such institutions are important for the industrialization and development process while financial markets mature, while becoming less relevant as financial markets develop. As this process unfolds, NDBs change their role to focus on indirect mechanisms of long-term finance, until they themselves are privatized or decommissioned.

We tried to complement the life-cycle hypothesis by looking at the costs and benefits associated with the creation of NDBs through an examination of the Brazilian National Social and Development Bank (BNDES), one of the largest development banks in the world. The BNDES plays an important role in the Brazilian

economy, but there are arguments against the benefits of its existence. For instance, Bond (2013) argues that the largest projects financed by the bank show a similar pattern: high level of state subsidies; lack of transparency; credit to projects with serious compliance problems on labor and environmental concerns; and a tendency to privilege certain economic groups. At the same time, this pattern is a regular one in the industrialization process, with countries around the world allocating capital to certain economic groups to foster industrial growth (Maddison, 2010).

In addition, even though state-owned banks are important in the Brazilian context, the size of the economy is conducive to different institutional arrangements. Moreover, building efficient state-owned banks is expensive and time-consuming. Still, we should note that it was through the coordinated efforts of the BNDES and other state-owned banks that the Brazilian government was able to spur fast industrialization, to foster investment, and to provide a rapid response to the freezing of credit markets following the financial crisis, even if government could have achieved the latter through other expansionary fiscal policy mechanisms.

Given the underdevelopment of financial markets in many parts of the world, there are authors who advocate the replication of the BNDES experience in other countries. For instance, Gumede, Govender, and Motshidi (2011) highlight the example of the BNDES as an countercyclical agent, and with policies that should be copied by the Development Bank of South Africa, while Mqoqi (2014) is more forthright in asking for a direct emulation of BNDES by the Industrial Development Corporation of South Africa. Also, Sanusi (2012) argues that infrastructure financing in Nigeria should follow the example of BNDES and the Indian Infrastructure Finance Company, not merely in terms of credit allocation, but also institutional building, although Nigeria may not be suitable for the creation of a development bank due to poor institutions. There are risks in this strategy. BNDES has the benefit of economies of scale and has certainly picked some losers over the years (Robinson & Torvik, 2005). There are also opportunity costs in terms of subsidized loans, as well as the possibility of crony capitalism, and potential crowding out effects. This last effect can be mitigated by timing the creation and management of the growth of NDBs. However, policymakers need to weigh other risks against the possible benefits of addressing a key market failure regarding long-term credit in developing countries.

NDBs like the BNDES may be replicable on a smaller scale in poor countries. Benefits include the funneling of long-term credit into local markets that are not deep enough to fund large long-term infrastructure projects. The functional model of such a bank is one in which it has to be capable of dealing with international institutions and to absorb part of the risk of infrastructure projects, but without leading the market. In that sense, such an NDB needs to use the network of local commercial banks to earmark credits with minimal distortion to local markets. It should not compete for deposits with commercial banks and should follow international and local governance rules for this kind of financial institution. Our main conclusion is that NDBs may not be the first best solution for providing long-term finance in developing countries. Still, they are a tenable solution for building financial institutions to fill an institutional void in less developed economies characterized by some measure of solid institutions.

## Funding

This document is an output from a project funded by the UK Aid from the Department for International Development (DFID) for the benefit of developing countries. However, the views expressed and information contained in it are not necessarily those of or endorsed by DFID, which can accept no responsibility for such views or information or for any reliance placed on them.

## References

- Aghion, B. A. (1999). Development banking. *Journal of Development Economics*, 58(1), 83–100.
- Andrianova, S., Demetriades, P., & Shortland, A. (2008). Government ownership of banks, institutions, and financial development. *Journal of Development Economics*, 85(1), 218–252.
- Banco Central do Brasil. (2014). *50 maiores bancos e o Consolidado do Sistema Financeiro Nacional*. Retrieved from: <http://www4.bcb.gov.br/top50/port/top50.asp>
- Berger, A. N., Clarke, G. R., Cull, R., Klapper, L., & Udell, G. F. (2005). Corporate governance and bank performance: A joint analysis of the static, selection, and dynamic effects of domestic, foreign, and state ownership. *Journal of Banking & Finance*, 29(8), 2179–2221.
- BNDES. (2016). *Corporate presentation*. Retrieved from [http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes\\_en/Galerias/Download/AF.DEPCO\\_english.pdf](http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_en/Galerias/Download/AF.DEPCO_english.pdf)
- Bond, P. (2013). The BRICS bank and shifts in multilateral finance: A view from South Africa. In *Presented at the SouthGovNet conference panel: Institutions of South-South Cooperation*. Fudan University Institute of International Relations, Shanghai, China.
- Bordo, M. (1993). The Bretton Woods International Monetary System: A historical overview. In D. Michael, Bordo, & Barry Eichengreen (Eds.), *A retrospective on the Bretton Woods System: Lessons for International Monetary Reform*. University of Chicago Press.
- Bruck, N. (1998). The role of development banks in the twenty-first century. *Journal of Emerging Markets*, 3, 39–68.
- Butkiewicz, J. L. (1995). The impact of a lender of last resort during the great depression: The case of the reconstruction finance corporation. *Explorations in Economic History*, 32(2), 197–216.
- Butkiewicz, J. L., & Solcan, M. (2016). The original operation twist: The War Finance Corporation's war bond purchases, 1918–1920. *Financial History Review*, 23(01), 21–46.
- Carvalho, D. (2014). The real effects of government-owned banks: Evidence from an emerging market. *Journal of Finance*, 69(2), 577–609.
- Freeman, R. (2006). Reconstruction finance corporation: How Roosevelt's RFC revived economic growth, 1933–45. *EIReconomics*, (March), 17.
- Gumede, W., Govender, M., & Motshidi, K. (2011). *The role of South Africa's state-owned development finance institutions (DFIs) in building a democratic developmental state*. Policy Brief, Development Bank of South Africa.
- Gutierrez, E., Rudolph, H., Homa, T., & Beneit, E. B. (2011). *Development banks: Role and mechanisms to increase their efficiency*. World Bank Policy Research Working Paper Series 5729.
- Hainz, C., & Kleimeier, S. (2012). Political risk, project finance, and the participation of development banks in syndicated lending. *Journal of Financial Intermediation*, 21(2), 287–314.
- Hochstetler, K., & Montero, A. P. (2013). The renewed developmental state: The National Development Bank and the Brazil Model. *Journal of Development Studies*, 49(11), 1484–1499.
- Horn, M. J. (1995). *The political economy of public administration: Institutional choice in the public sector*. Cambridge University Press.
- Inoue, C. F., Lazzarini, S. G., & Musacchio, A. (2013). Leviathan as a minority shareholder: Firm-level implications of state equity purchases. *Academy of Management Journal*, 56(6), 1775–1801.
- Jaffee, D., & Quigley, J. M. (2012). The future of the government-sponsored enterprises: The role for government in the US mortgage market. In *Housing and the Financial Crisis*, pp. 361–417. University of Chicago Press.
- Jorgensen, O. H., & Apostolou, A. (2013). *Brazil's bank spread in international context: From macro to micro drivers*. World Bank Policy Research Working Paper 6611.
- Körner, T., & Schnabel, I. (2011). Public ownership of banks and economic growth. *Economics of Transition*, 19(3), 407–441.
- La Porta, R., López-de-Silanes, F., & Shleifer, A. (2002). Government ownership of banks. *Journal of Finance*, 57(2), 265–301.
- Lazzarini, S. G., Musacchio, A., Bandeira-de-Mello, R., & Marcon, R. (2015). What do state-owned development banks do? Evidence from BNDES, 2002–09. *World Development*, 66, 237–253.
- Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature*, 35, 688–726.
- Levine, R. (2005). *Finance and growth: Theory and evidence*. pp. 865–934. *Handbook of economic growth* (Vol. 1).
- Levine, R., & Zervos, S. (1998). Stock markets, banks, and economic growth. *American Economic Review*, 88(3), 537–558.
- López, P. J. (2012). Nacional Financiera durante la industrialización vía sustitución de importaciones en México. *América Latina en la Historia Económica*, 19(3), 129–163.
- Luna-Martinez, D., & Vicente, C. L. (2012). *Global survey of development banks*. World Bank Policy Research Working Paper, 5969.
- Maddison, A. (2010). *Economic progress and policy in developing countries* (2nd ed.). London: Routledge.
- Meggison, W. (2004). *The financial economics of privatization*. New York, United States: Oxford University Press.
- Micco, A., Panizza, U., & Yanez, M. (2007). Bank ownership and performance. Does politics matter? *Journal of Banking & Finance*, 31(1), 219–241.
- Mqoqi, N. (2014). *Can the Industrial Development Corporation (IDC) of South Africa emulate the success of the Brazilian Economic and Social Development Bank (BNDES) in financing enterprises and boosting manufacturing?* (Doctoral dissertation).
- Musacchio, A., & Lazzarini, S. G. (2014). *Reinventing state capitalism: Leviathan in business, Brazil and beyond*. Cambridge, MA: Harvard University Press.
- Oliveira, F. N. (2014). *Investment of Firms in Brazil: Do financial restrictions, unexpected monetary shocks and BNDES play important roles?* pp. 366. Brazil Central Bank. Working Paper.
- Robinson, J. A., & Torvik, R. (2005). White elephants. *Journal of Public Economics*, 89(2), 197–210.
- Sanusi, S. L. (2012). The role of development finance institutions in infrastructure development: What Nigeria can learn from BNDES and the Indian Infrastructure Finance Company. In *3rd ICRC PPP stakeholders forum*.
- Smallridge, D., Buchner, B., Trabacchi, C., Netto, M., Gomes Lorenzo, J. J., & Serra, L. (2013). *The role of national development banks in catalyzing international climate finance*. Inter-American Development Bank Working Paper IDB-MG-148.
- Todd, W. F. (1992). History of and rationales for the reconstruction finance corporation. *Economic Review-Federal Reserve Bank of Cleveland*, 28(4), 22–35.
- Torres, E. T., & Macahyba, L. (2012). *O Elo Perdido: O Mercado de Títulos de Dívida Corporativa no Brasil: Avaliação e Propostas*. São Paulo: IEDI.
- World Bank. (2013). Rethinking the role of the State in finance. *Global Financial Development Report*, 2013.
- Yeyati, E., Micco, A., & Panizza, U. (2007). A reappraisal of state-owned banks. *Economía*, 7(2), 209–247.